TCT-162
Safety And Efficacy of a Device to Narrow the Coronary Sinus for the Treatment of Refractory Angina: A Single Center ‘Real-World’ Experience
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BACKGROUND The coronary sinus (CS) Reducer is a recently introduced device to treat patients with severe anginal symptoms who are refractory to optimal medical therapy and not amenable for conventional revascularization. We aimed to assess the safety and efficacy of the CS Reducer in a “real world” cohort of patients with refractory angina.

METHODS This is a single center retrospective registry. Patients with severe anginal symptoms, objective evidence of myocardial ischemia using any modality and without options for conventional revascularization were regarded eligible for CS Reducer implantation.

RESULTS Twenty-three patients (74.0% male, mean age 70 ± 8 years) underwent CS Reducer implantation (91.0% previous bypass surgery, 48.0% previous myocardial infarction, 83.0% previous percutaneous intervention, 52.0% diabetes mellitus). The safety endpoint (successful delivery and deployment) was met in all patients. One patient suffered a procedure-related access site complication (neck hematoma), which was treated conservatively. After a median follow-up of 9 [8–14] months the efficacy endpoint (any reduction in Canadian Cardiovascular Society (CCS) class with or without angina) was reached in 17 patients (74.0%). The majority of patients (78.3%) experienced an improvement of clinical symptoms: 8 (34.8%) by 1 CCS class, 8 (34.8%) by 2 CCS classes (1 of them underwent a revascularization at follow up) and 2 (8.7%) by 3 CCS classes. One patient died 4 month after implantation because of progressive heart failure (no association with the CS Reducer implantation).

CONCLUSIONS In this single center ‘real-world’ experience, the CS Reducer implantation was safe and demonstrated clinical efficacy in the treatment of refractory angina at mid-term follow-up.

TCT-163
Physiologic Assessment of Intermediate Coronary Artery Stenosis by Intravascular Ultrasound Radiofrequency Signal Analysis of Blood Specckles: A Comparison with Fractional Flow Reserve and Instantaneous Wave-Free Ratio
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BACKGROUND Although fractional flow reserve (FFR) is the gold standard in functional assessment of intermediate coronary stenosis, it lacks anatomical information essential for risk stratification of plaque and guidance of PCI. In IVUS, integrated backscatter (IB) values of blood speckles, calculated as the average power of backscattered radiofrequency (RF) signals from blood, have been shown to change as a function of blood flow velocity. This study aimed to investigate potential utility of RF-IVUS for assessment of functional significance of intermediate coronary stenosis.

METHODS In 42 patients with intermediate lesions in >1 epicardial coronary arteries, 45 arteries (28 left anterior descending; 3 left circumflex; 14 right coronary artery) were evaluated by IB-IVUS and intracoronary pressure measurements. Average IB values of blood speckles within the lumen were measured at proximal (a segment near the orifice of the artery) and distal (a disease-free segment >10 mm distal to the tightest site) segments to the lesion. As IB is a logarithmic variable, a ratio of the distal and proximal IB values was calculated as ΔIB between the 2 sites. As control, FFR during hyperemia and instantaneous wave-free ratio (iFR) were obtained using a coronary pressure wire.

RESULTS Overall, the minimum lumen area (MLA) of the lesions ranged from 1.0 to 7.4 mm2 (median 2.1 mm2). ΔIB significantly correlated with both FFR and iFR (Figure), which was also confirmed in a subset of lesions with small MLA (defined as < the median value). Receiver operating characteristic (ROC) curve analyses identified the best cut-off value as 7.25 of ΔIB for predicting FFR ≤0.8 (sensitivity 100%; specificity 88%; positive predictive value 86%; negative predictive value 100%, accuracy 93%), and 9.14 of ΔIB for predicting iFR ≤0.89 (sensitivity 100%; specificity 79%; positive predictive value 61%; negative predictive value 100%; accuracy 84%).

CATEGORIES CORONARY: Angioplasty Overview and Outcomes
KEYWORDS Chronic total occlusion, PCI, Scoring system

CATEGORIES STRUCTURAL: Heart Failure
KEYWORDS Coronary, microcirculatory dysfunction, Stenting, coronary
CONCLUSIONS This study supports the feasibility of RF-IVUS to estimate coronary physiology across intermediate stenosis, demonstrating significant association of blood flow with FFR and iFR even in relatively small MLA lesions. Further investigation is warranted to confirm the potential utility of RF-IVUS for hybrid (both anatomic and functional) assessment of coronary artery disease, which may be helpful for time and cost-effective resource utilization.

CATEGORIES IMAGING: Intravascular

KEYWORDS Fractional flow reserve, IB-IVUS, Imaging technology

TCT-164
Causes of Death after Percutaneous Coronary Intervention versus Coronary Artery Bypass Grafting in Complex Coronary Artery Disease: 5-Year follow-up of the SYNTAX trial

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BACKGROUND To determine the specific cause of death and their potential influencing factors in patients with complex coronary artery disease who underwent percutaneous coronary intervention (PCI) or coronary artery bypass grafting (CABG) in the SYNTAX randomized trial and nested registries.

METHODS An independent Clinical Events Committee consisting of expert physicians blinded to the study treatment, sub-classified causes of death in cardiovascular (cardiac and vascular), non-cardiovascular and undetermined according to the trial protocol. Cardiac deaths were classified as sudden cardiac, myocardial infarction (MI)-related, heart failure, COPD, renal failure and atrial fibrillation. The number of patients presenting with acute MI increased from 26.9% in 2000 to 25.9% in 2009 to 45.8% in 2012. Overall, 43.1% of the PCI admissions were elective, 38.3% were urgent and 16.8% were emergent. Angioplasty was performed in 9.5%, and PCI with stent placement in 90.4%. The use of bare metal stents declined from 85.7% in 2000 to 23.5% in 2012, with a corresponding increase in the use of drug-eluting stents (DES) (70.3% in 2012). The use of DES peaked in 2005 at 84.1%. Hospital mortality increased from 2.1% in 2000 to 3.1% in 2012, despite reaching a nadir of 1.8% from 2004-2006. Hospital mortality was 1% for elective, 2.1% for urgent and 4.5% for emergent admissions. The biggest increase in mortality over time was seen for elective admissions from 0.8% in 2000 to 3.4% in 2012. Compared to year 2000, adjusted hospital mortality odds ratio was 1.42 in 2012 (95% CI 1.36 - 1.48), signifying 42% increase likelihood of death with PCI during the study period after accounting for differences in baseline characteristics. Overall survival was 93% at 6 months, 90% at 1 year, 80% at 3 years and 69% at 5 years. From 2000 through 2006, 5-year survival remained at 70%, and subsequently modestly declined to 66% for 2009.

RESULTS From 2000 through 2006, the number of patients undergoing PCI increased from 246,528 to 318,622, and then decreased to 161,667 in 2012 (11 months of data). There was a significant increase over time in the incidence of comorbidities examined, including HTN, diabetes, PVD, history of stroke or TIA, heart failure, COPD, renal failure and atrial fibrillation. The number of patients presenting with acute MI increased from 26.9% in 2000 to 25.9% in 2009 to 45.8% in 2012. Overall, 43.1% of the PCI admissions were elective, 38.3% were urgent and 16.8% were emergent. Angioplasty was performed in 9.5%, and PCI with stent placement in 90.4%. The use of bare metal stents declined from 85.7% in 2000 to 23.5% in 2012, with a corresponding increase in the use of drug-eluting stents (DES) (70.3% in 2012). The use of DES peaked in 2005 at 84.1%. Hospital mortality increased from 2.1% in 2000 to 3.1% in 2012, despite reaching a nadir of 1.8% from 2004-2006. Hospital mortality was 1% for elective, 2.1% for urgent and 4.5% for emergent admissions. The biggest increase in mortality over time was seen for elective admissions from 0.8% in 2000 to 3.4% in 2012. Compared to year 2000, adjusted hospital mortality odds ratio was 1.42 in 2012 (95% CI 1.36 - 1.48), signifying 42% increase likelihood of death with PCI during the study period after accounting for differences in baseline characteristics. Overall survival was 93% at 6 months, 90% at 1 year, 80% at 3 years and 69% at 5 years. From 2000 through 2006, 5-year survival remained at 70%, and subsequently modestly declined to 66% for 2009.

TCT-165
Trends in Patient Characteristics and Outcomes of Percutaneous Coronary Intervention in the Elderly: Analysis of Medicare Beneficiaries from 2000-2012

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BACKGROUND In the past two decades, significant advances have occurred in the management of coronary artery disease. It is unclear whether increased options for treatment, improved technology and expanded available evidence have translated into nationwide changes in comorbidity profiles and outcomes of patients presenting for PCI.

METHODS 3,387,976 Medicare beneficiaries >= 65 yrs of age who underwent PCI from 1/2000 -1/2012 were included. Comorbidities were determined using ICD-9-CM diagnostic codes from any hospitalization within 1 yr prior to index admission. Trends in patient characteristics and hospital outcomes were assessed with Cochran-Armitage trend tests. Long-term survival was examined with Kaplan-Meier survival curves.

RESULTS From 2000 through 2006, the number of patients undergoing PCI increased from 246,528 to 318,622, and then decreased to 161,667 in 2012 (11 months of data). There was a significant increase over time in the incidence of all comorbidities examined, including HTN, diabetes, PVD, history of stroke or TIA, heart failure, COPD, renal failure and atrial fibrillation. The number of patients presenting with acute MI increased from 26.9% in 2000 to 25.9% in 2009 to 45.8% in 2012. Overall, 43.1% of the PCI admissions were elective, 38.3% were urgent and 16.8% were emergent. Angioplasty was performed in 9.5%, and PCI with stent placement in 90.4%. The use of bare metal stents declined from 85.7% in 2000 to 23.5% in 2012, with a corresponding increase in the use of drug-eluting stents (DES) (70.3% in 2012). The use of DES peaked in 2005 at 84.1%. Hospital mortality increased from 2.1% in 2000 to 3.1% in 2012, despite reaching a nadir of 1.8% from 2004-2006. Hospital mortality was 1% for elective, 2.1% for urgent and 4.5% for emergent admissions. The biggest increase in mortality over time was seen for elective admissions from 0.8% in 2000 to 3.4% in 2012. Compared to year 2000, adjusted hospital mortality odds ratio was 1.42 in 2012 (95% CI 1.36 - 1.48), signifying 42% increase likelihood of death with PCI during the study period after accounting for differences in baseline characteristics. Overall survival was 93% at 6 months, 90% at 1 year, 80% at 3 years and 69% at 5 years. From 2000 through 2006, 5-year survival remained at 70%, and subsequently modestly declined to 66% for 2009.